



&lt;120&gt; Plant Farnesyltransferases

<130> BB-1240

<140> 09/786.675

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<150> 60/099,521

<151> 1998-09-08

<160> 23

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<210> 1

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<212> DNA

<213> Zea mays

<400> 1

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<212> PRT

<213> Zea mays

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**SECRET**

00786675-030701

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Arg	Ile	Ser	Ala	Val	Cys	Phe	Lys	Val	Leu	Lys	Asn	Asp	Trp	Thr	Cys
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Pro	Glu	Thr	Ala	Asp	Asp	Asp	Pro	Ala	Ala	Ala	Val	Cys	Cys	Ile	Leu
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acaagagatg gcttgccggag aaattaggac cagatattgc aaataaagag cacgaattta 480  
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<213> Oryza sativa

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35 40 45  
Arg Glu Val Met Asp Tyr Phe Arg Ala Leu Tyr Phe Ala Gly Glu Arg  
50 55 60  
Ser Val Arg Ala Leu His Leu Thr Ala Glu Val Ile Asp Leu Asn Pro  
65 70 75 80  
Gly Asn Tyr Thr Val Trp His Phe Arg Arg Leu Val Leu Glu Ala Leu  
85 90 95  
Asp Ala Asp Leu Arg Glu Glu Met Asp Phe Val Asp Arg Ile Ala Glu  
100 105 110  
Cys Asn Pro Lys Asn Tyr Gln Ile Trp His His Lys Arg Trp Leu Ala  
115 120 125  
Glu Lys Leu Gly Pro Asp Ile Ala Asn Lys Glu His Glu Phe Thr Arg  
130 135 140  
Lys Ile Leu Ser Met Asp Ala Lys Asn Tyr His Ala Trp Ser His Arg  
145 150 155 160

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Gln Trp Val Leu Gln Ala Leu Gly Gly Trp Glu Thr Glu Leu Gln Tyr  
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 Cys Asn Gln Leu Leu Glu Glu Asp Val Phe Asn Asn Ser Ala Trp Asn  
 180 185 190  
 Gln Arg Tyr Leu Val Ile Thr Ser Ser Pro Leu Leu Gly Gly Leu Ala  
 195 200 205  
 Ala Met Arg Asp Ser Glu Val Asp Tyr Thr Val Gly Ala Ile Leu Ala  
 210 215 220  
 Asn Pro Gln Asn Glu Ser Pro Trp Arg Tyr Leu Lys Gly Leu Tyr Lys  
 225 230 235 240  
 Gly Glu Asn Asn Leu Leu Met Ala Asp Glu Arg Ile Ser Asp Val Cys  
 245 250 255  
 Leu Lys Val Leu Lys His Asp Ser Thr Cys Val Phe Ala Leu Ser Leu  
 260 265 270  
 Leu Leu Asp Leu Leu Gln Ile Gly Leu Gln Pro Ser Asp Glu Leu Lys  
 275 280 285  
 Gly Thr Ile Glu Ala Ile Lys Asn Ser Asp Pro Glu Ala Asp Glu Ala  
 290 295 300  
 Val Asp Ala Asp Leu Ala Thr Ala Ile Cys Ser Ile Leu Gln Arg Cys  
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 ccctaaccct gtcgttccga tccagtacac tgaagagttt tccgaagtta tggattactt 180  
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 taataaattat cagatgtggc atcatagacg atgggttgcc gagaagttag gtcctgaagc 420  
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0978665-030701

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 35 40 45  
 Glu Val Met Asp Tyr Phe Arg Ala Val Tyr Leu Thr Asp Glu Arg Ser  
 50 55 60  
 Pro Arg Ala Leu Ala Leu Thr Ala Glu Ala Val Gln Phe Asn Ser Gly  
 65 70 75 80  
 Asn Tyr Thr Val Trp His Phe Arg Arg Leu Leu Leu Glu Ser Leu Lys  
 85 90 95  
 Val Asp Leu Asn Asp Glu Leu Asp Phe Val Glu Arg Met Ala Ala Gly  
 100 105 110  
 Asn Ser Lys Asn Tyr Gln Met Trp His His Arg Arg Trp Val Ala Glu  
 115 120 125  
 Lys Leu Gly Pro Glu Ala Arg Asn Asn Glu Leu Glu Phe Thr Lys Lys  
 130 135 140  
 Ile Leu Ser Val Asp Ala Lys His Tyr His Ala Trp Ser His Arg Gln  
 145 150 155 160  
 Trp Ala Leu Gln Thr Leu Gly Gly Trp Glu Asp Glu Leu Asn Tyr Cys  
 165 170 175  
 Thr Glu Leu Leu Lys Glu Asp Ile Phe Asn Asn Ser Ala Trp Asn Gln  
 180 185 190  
 Arg Tyr Phe Val Ile Thr Arg Ser Pro Phe Leu Gly Gly Leu Lys Ala  
 195 200 205  
 Met Arg Glu Ser Glu Val Leu Tyr Thr Ile Glu Ala Ile Ile Ala Tyr  
 210 215 220  
 Pro Glu Asn Glu Ser Ser Trp Arg Tyr Leu Arg Gly Leu Tyr Lys Gly  
 225 230 235 240  
 Glu Thr Thr Ser Trp Val Asn Asp Pro Gln Val Ser Ser Val Cys Leu  
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 Lys Ile Leu Arg Thr Lys Ser Asn Tyr Val Phe Ala Leu Ser Thr Ile  
 260 265 270

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 50 55 60  
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 Asn Tyr Thr Val Trp His Phe Arg Arg Leu Leu Leu Glu Ser Leu Lys  
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 100 105 110  
 Asn Ser Lys Asn Tyr Gln Met Trp Cys Asp Ala Leu Leu Cys Ser Phe  
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 Phe His Thr Leu His His Arg Arg Trp Val Ala Glu Lys Leu Gly Pro  
 130 135 140  
 Glu Ala Arg Asn Asn Glu Leu Glu Phe Thr Lys Lys Ile Leu Ser Val  
 145 150 155 160  
 Asp Ala Lys His Tyr His Ala Trp Ser His Arg Gln Trp Ala Leu Gln  
 165 170 175  
 Thr Leu Gly Gly Trp Glu Asp Glu Leu Asn Tyr Cys Thr Glu Leu Leu  
 180 185 190  
 Lys Glu Asp Ile Phe Asn Asn Ser Ala Trp Asn Gln Arg Tyr Phe Val  
 195 200 205  
 Ile Thr Arg Ser Pro Phe Leu Gly Gly Leu Lys Ala Met Arg Glu Ser  
 210 215 220  
 Glu Val Leu Tyr Thr Ile Glu Ala Ile Ile Ala Tyr Pro Glu Asn Glu  
 225 230 235 240  
 Ser Ser Trp Arg Tyr Leu Arg Gly Leu Tyr Lys Gly Glu Thr Thr Ser  
 245 250 255  
 Trp Val Asn Asp Pro Gln Val Ser Ser Val Cys Leu Lys Ile Leu Arg  
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 Thr Lys Ser Asn Tyr Val Phe Ala Leu Ser Thr Ile Leu Asp Leu Ile  
 275 280 285  
 Cys Phe Gly Tyr Gln Pro Asn Glu Asp Ile Arg Asp Ala Ile Asp Ala  
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 Leu Lys Thr Ala Asp Met Asp Lys Gln Asp Leu Asp Asp Asp Glu Lys  
 305 310 315 320  
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 <213> Triticum aestivum

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 <213> Triticum aestivum

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 Asp Ala Ile His Leu Asn Pro Gly Asn Tyr Thr Val Trp His Phe Arg  
 50 55 60  
 Arg Val Val Leu Glu Ala Leu Asp Ala Asp Leu Leu Leu Glu Met His  
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 Phe Val Asp Gln Ile Ala Glu Ser Asn Pro Lys Asn Tyr Gln Val Trp  
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 His His Lys Arg Trp Leu Ala Glu Lys Ile Gly Pro Asp Ala Ala Asn  
 100 105 110  
 Ser Glu His Asp Phe Thr Arg Lys Ile Leu Ala Met Asp Ala Lys Asn  
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**SECRET**

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Gln	Met	Lys	Val	Glu	Ala	Arg	Val	Gly	Asp	Ile	Tyr	Arg	Ser	Leu	Phe
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	50					55					60				
Gln	His	Ile	Glu	Tyr	Leu	Thr	Pro	Gly	Leu	Arg	His	Met	Gly	Pro	Ala
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Phe	His	Val	Leu	Asp	Ala	Asn	Arg	Pro	Trp	Leu	Cys	Tyr	Trp	Met	Val
				85					90					95	
His	Pro	Leu	Ala	Leu	Leu	Asp	Glu	Ala	Leu	Asp	Asp	Asp	Leu	Glu	Asn
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	130					135					140				
Val	Asn	Thr	Leu	Val	Thr	Ile	Gly	Ser	Glu	Arg	Ala	Leu	Ser	Ser	Ile
	145				150					155					160
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			165						170					175	
Gly	Ala	Phe	Arg	Met	His	Asp	Gly	Gly	Glu	Ile	Asp	Val	Arg	Ala	Ser
			180					185					190		
Tyr	Thr	Ala	Ile	Ser	Val	Ala	Ser	Leu	Val	Asn	Ile	Leu	Asp	Phe	Lys
		195					200					205			
Leu	Ala	Lys	Gly	Val	Gly	Asp	Tyr	Ile	Ala	Arg	Cys	Gln	Thr	Tyr	Glu
	210					215					220				
Gly	Gly	Ile	Ala	Gly	Glu	Pro	Tyr	Ala	Glu	Ala	His	Gly	Gly	Tyr	Thr
	225				230					235					240
Phe	Cys	Gly	Leu	Ala	Ala	Leu	Ile	Leu	Leu	Asn	Glu	Ala	Glu	Lys	Val
			245						250					255	
Asp	Leu	Pro	Ser	Leu	Ile	Gly	Trp	Val	Ala	Phe	Arg	Gln	Gly	Val	Glu
			260					265					270		
Cys	Gly	Phe	Gln	Gly	Arg	Thr	Asn	Lys	Leu	Val	Asp	Gly	Cys	Tyr	Ser

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275

280

285

Phe Trp Gln Gly Ala Ala Ile Ala Phe Thr Gln Lys Leu Ile Thr Ile  
290 295 300

Val Asp Lys Gln Leu Lys Ser Ser Tyr Ser Cys Lys Arg Pro Ser Gly  
305 310 315 320

Glu Asp Ala Cys Ser Thr Ser Ser Tyr Gly Cys Thr Ala Lys Lys Ser  
325 330 335

Ser Ser Ala Val Asp Tyr Ala Lys Phe Gly Phe Asp Phe Ile Gln Gln  
340 345 350

Ser Asn Gln Ile Gly Pro Leu Phe His Asn Ile Ala Leu Gln Gln Tyr  
355 360 365

Ile Leu Leu Cys Ser Gln Val Leu Glu Gly Gly Leu Arg Asp Lys Pro  
370 375 380

Gly Lys Asn Arg Asp His Tyr His Ser Cys Tyr Cys Leu Ser Gly Leu  
385 390 395 400

Ala Val Ser Gln Tyr Ser Ala Met Thr Asp Thr Gly Ser Cys Pro Leu  
405 410 415

Pro Gln His Val Leu Gly Pro Tyr Ser Asn Leu Leu Glu Pro Ile His  
420 425 430

Pro Leu Tyr Asn Val Val Leu Asp Lys Tyr His Thr Ala Tyr Glu Phe  
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Phe Ser Glu Glu  
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<210> 13

<211> 1031

<212> DNA

<213> *Oryza sativa*

<400> 13

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ccatatactc ctgctgctgc tgagggcggt ccggcagcgg atagccaggc cgctgagctg 180
ccccggctga ctgtgacgca ggtggagcag atgaagggtg aggcgaagggt gggcgaaatc 240
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gagcagcatg ttgagtattt gacgagagg ctgaaacatc ttggaccaag cttccatgtg 360
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gaaataacctg acgatgttga ggatgatatt gtggacttct tatctcgatg tcaggacaaa 480
gatggtggtt atggcggagg acctggacag ttgcctcatc tcgctacaac ttatgctgct 540
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ctgtacaagt tcatgcttcg gatgaaagat acatcgggag ctttcagaat gcatgatggt 660
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gctacgatga tcctgcttaa cgaagtggac aaacttgatt tggctagctt gattggctgg 900
gtggcatttc cccaaggagt ggaatgtgga tttcaaggac gaactaataa attggttgat 960
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actgccaaac g                                     1031
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<210> 14

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<211> 313  
 <212> PRT  
 <213> Oryza sativa

<400> 14

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Ala	Glu	Gly	Gly	Pro	Ala	Ala	Asp	Ser	Gln	Ala	Ala	Glu	Leu	Pro	Arg		
			20					25					30				
Leu	Thr	Val	Thr	Gln	Val	Glu	Gln	Met	Lys	Val	Glu	Ala	Lys	Val	Gly		
		35					40					45					
Glu	Ile	Tyr	Arg	Val	Leu	Phe	Gly	Asn	Ala	Pro	Asn	Ala	Asn	Ser	Leu		
	50					55					60						
Met	Leu	Glu	Leu	Trp	Arg	Glu	Gln	His	Val	Glu	Tyr	Leu	Thr	Arg	Gly		
	65				70					75					80		
Leu	Lys	His	Leu	Gly	Pro	Ser	Phe	His	Val	Leu	Asp	Ala	Asn	Arg	Pro		
				85					90					95			
Trp	Leu	Cys	Tyr	Trp	Ile	Ile	His	Ala	Leu	Ala	Leu	Leu	Asp	Glu	Ile		
			100					105						110			
Pro	Asp	Asp	Val	Glu	Asp	Asp	Ile	Val	Asp	Phe	Leu	Ser	Arg	Cys	Gln		
			115				120					125					
Asp	Lys	Asp	Gly	Gly	Tyr	Gly	Gly	Gly	Pro	Gly	Gln	Leu	Pro	His	Leu		
	130					135					140						
Ala	Thr	Thr	Tyr	Ala	Ala	Val	Asn	Thr	Leu	Val	Thr	Ile	Gly	Ser	Glu		
	145				150					155					160		
Arg	Ala	Leu	Ser	Ser	Val	Asn	Arg	Asp	Asn	Leu	Tyr	Lys	Phe	Met	Leu		
				165					170					175			
Arg	Met	Lys	Asp	Thr	Ser	Gly	Ala	Phe	Arg	Met	His	Asp	Gly	Gly	Glu		
		180						185					190				
Ile	Asp	Val	Arg	Ala	Ser	Tyr	Thr	Ala	Ile	Ser	Val	Ala	Ser	Leu	Val		
	195						200					205					
Asn	Ile	Leu	Asp	Gly	Glu	Leu	Ala	Lys	Gly	Val	Gly	Asn	Tyr	Ile	Thr		
	210					215					220						
Arg	Cys	Gln	Thr	Tyr	Glu	Gly	Gly	Ile	Ala	Gly	Glu	Pro	Tyr	Ala	Glu		
	225				230					235					240		
Ala	His	Gly	Gly	Tyr	Thr	Phe	Cys	Gly	Leu	Ala	Thr	Met	Ile	Leu	Leu		
				245					250					255			
Asn	Glu	Val	Asp	Lys	Leu	Asp	Leu	Ala	Ser	Leu	Ile	Gly	Trp	Val	Ala		
			260				265						270				
Phe	Arg	Gln	Gly	Val	Glu	Cys	Gly	Phe	Gln	Gly	Arg	Thr	Asn	Lys	Leu		
		275					280					285					
Val	Asp	Gly	Cys	Tyr	Ser	Phe	Trp	Gln	Gly	Ala	Ala	Leu	Ala	Leu	Thr		
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Val His Arg Val Ala Pro Thr Ala Lys  
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<210> 15  
<211> 1504  
<212> DNA  
<213> Glycine max

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cccaaaccct catgttggag cttcaacgcg ataatacacat gcagtatgtc tccaaaggcc 180  
ttcgccatct cagttccgca ttttccgttt tggacgctaa tcgaccctgg ctctgctact 240  
ggatcttcca ctccattgct ttgtcgggag aatccgtcga tgatgaactc gaagataacg 300  
ctatcgattt tcttaaccgt tgccaggatc cgaatgggtg atatgccggg ggaccaggcc 360  
agatgcctca tattgccaca acttatgctg ctgttaattc acttattact ttgggtggtg 420  
agaaatccct ggcatacaatt aatagagata aactgtatgg gtttctgcgg cggatgaagc 480  
aaccaaatgg tggattcagg atgcatgatg aagggtgaaat tgatgttcga gcttgctaca 540  
ctgccatttc tgttgcaagt gttttgaaca ttttggatga tgagctgac cagaatggtg 600  
gagactacat tataagctgt caaacatatg aggggtggcat tgctggtgag cctggttctg 660  
aggctcatgg tgggtacacc ttttgtggat tagctacaat gattctgatt ggtgagggtta 720  
atcatttggg tctgcctcga ttagttgact ggggtgtatt ccgacaagggt aaggaatgtg 780  
gattccaggg gagaacaaat aaactgggtg atggatgcta ttccttttgg cagggtggtg 840  
ctgttgctct attgcaaaga ttatcttcta ttatcaacaa acagatggaa gagacatcac 900  
agatttttgc ggtatcttat gtatctgaag caaaagaaag tttggatgga acctctagtc 960  
atgcaacatg ccgtgggtgag catgaaggca ccagtgaatc cagttcatct gattttaaaa 1020  
atattgccta taaattttatt aatgagtggg gagcacaaga accacttttt cacagtattg 1080  
ctttacagca atatattctc ttatgtgcac aggagcaaga ggggtggactg agagacaaaac 1140  
cgggtaaacg tagagatcat tatcacacat gttactgttt aagtggactc tcattgtgcc 1200  
agtatagttg gtcaaagcac ccagattctc caccactgcc taatctagta ttaggcccct 1260  
actctaactc cttagaacca atccaccccc tctttaatgt tgtcttggga cgatatcgtg 1320  
aagctcatga attcttcttt actgagtcgt gaccactggg tttagctacc aacaacttta 1380  
tttgataaat gtaaaataaa ttcattggaa catataaatg taaaacagca ttggattaaa 1440  
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1500  
aaaa 1504

<210> 16  
<211> 429  
<212> PRT  
<213> Glycine max

<400> 16  
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Pro Arg Asn Ala Gln Thr Leu Met Leu Glu Leu Gln Arg Asp Asn His  
20 25 30  
Met Gln Tyr Val Ser Lys Gly Leu Arg His Leu Ser Ser Ala Phe Ser  
35 40 45  
Val Leu Asp Ala Asn Arg Pro Trp Leu Cys Tyr Trp Ile Phe His Ser  
50 55 60  
Ile Ala Leu Ser Gly Glu Ser Val Asp Asp Glu Leu Glu Asp Asn Ala  
65 70 75 80  
Ile Asp Phe Leu Asn Arg Cys Gln Asp Pro Asn Gly Gly Tyr Ala Gly  
85 90 95

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Gly	Pro	Gly	Gln	Met	Pro	His	Ile	Ala	Thr	Thr	Tyr	Ala	Ala	Val	Asn		
			100					105						110			
Ser	Leu	Ile	Thr	Leu	Gly	Gly	Glu	Lys	Ser	Leu	Ala	Ser	Ile	Asn	Arg		
		115					120						125				
Asp	Lys	Leu	Tyr	Gly	Phe	Leu	Arg	Arg	Met	Lys	Gln	Pro	Asn	Gly	Gly		
	130					135					140						
Phe	Arg	Met	His	Asp	Glu	Gly	Glu	Ile	Asp	Val	Arg	Ala	Cys	Tyr	Thr		
145					150				155						160		
Ala	Ile	Ser	Val	Ala	Ser	Val	Leu	Asn	Ile	Leu	Asp	Asp	Glu	Leu	Ile		
				165					170					175			
Gln	Asn	Val	Gly	Asp	Tyr	Ile	Ile	Ser	Cys	Gln	Thr	Tyr	Glu	Gly	Gly		
			180					185					190				
Ile	Ala	Gly	Glu	Pro	Gly	Ser	Glu	Ala	His	Gly	Gly	Tyr	Thr	Phe	Cys		
		195					200					205					
Gly	Leu	Ala	Thr	Met	Ile	Leu	Ile	Gly	Glu	Val	Asn	His	Leu	Asp	Leu		
	210					215					220						
Pro	Arg	Leu	Val	Asp	Trp	Val	Val	Phe	Arg	Gln	Gly	Lys	Glu	Cys	Gly		
225					230					235					240		
Phe	Gln	Gly	Arg	Thr	Asn	Lys	Leu	Val	Asp	Gly	Cys	Tyr	Ser	Phe	Trp		
				245					250					255			
Gln	Gly	Gly	Ala	Val	Ala	Leu	Leu	Gln	Arg	Leu	Ser	Ser	Ile	Ile	Asn		
			260					265					270				
Lys	Gln	Met	Glu	Glu	Thr	Ser	Gln	Ile	Phe	Ala	Val	Ser	Tyr	Val	Ser		
		275					280					285					
Glu	Ala	Lys	Glu	Ser	Leu	Asp	Gly	Thr	Ser	Ser	His	Ala	Thr	Cys	Arg		
	290					295					300						
Gly	Glu	His	Glu	Gly	Thr	Ser	Glu	Ser	Ser	Ser	Ser	Asp	Phe	Lys	Asn		
305					310					315					320		
Ile	Ala	Tyr	Lys	Phe	Ile	Asn	Glu	Trp	Arg	Ala	Gln	Glu	Pro	Leu	Phe		
				325					330					335			
His	Ser	Ile	Ala	Leu	Gln	Gln	Tyr	Ile	Leu	Leu	Cys	Ala	Gln	Glu	Gln		
			340					345					350				
Glu	Gly	Gly	Leu	Arg	Asp	Lys	Pro	Gly	Lys	Arg	Arg	Asp	His	Tyr	His		
		355					360					365					
Thr	Cys	Tyr	Cys	Leu	Ser	Gly	Leu	Ser	Leu	Cys	Gln	Tyr	Ser	Trp	Ser		
	370					375					380						
Lys	His	Pro	Asp	Ser	Pro	Pro	Leu	Pro	Asn	Leu	Val	Leu	Gly	Pro	Tyr		
385					390					395				400			
Ser	Asn	Leu	Leu	Glu	Pro	Ile	His	Pro	Leu	Phe	Asn	Val	Val	Leu	Gly		
				405					410					415			
Arg	Tyr	Arg	Glu	Ala	His	Glu	Phe	Phe	Phe	Thr	Glu	Ser					

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<210> 17  
 <211> 533  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> unsure  
 <222> (499)  
 <223> n = A, C, G or T

<220>  
 <221> unsure  
 <222> (525)  
 <223> n = A, C, G or T

<400> 17  
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 gcccaaaacc tcatgttaga gctgcaacgc gataatcaca tgcagtatct ctccaaaggc 180  
 ctacgccatc tcagttccgc gttttctgtc ttggacgcta atcgaccctg gctctgttac 240  
 tggatcttcc attccattgc tttgctggga gaatccgtcg acgacgaact cgaagataac 300  
 actatcgatt ttcttaaccg ttgccaggat ccgaatggtg gatatgctgg gggaccaggc 360  
 cagatgcctc acattgccac aacatatgct gcagttaata cacttattac tttgggtggt 420  
 cagaaatcct ggcatacaatt aatagggtgag ataaactgta tgggtttctg cggcggatga 480  
 agcaatcaaa tgggggggant caagatgcat gatgaaagga gaaanttgat gtc 533

<210> 18  
 <211> 141  
 <212> PRT  
 <213> Glycine max

<400> 18  
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 Asp Gln Trp Met Val Glu Ser Gln Val Phe Gln Ile Tyr Gln Leu Phe  
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 Ala Thr Ile Pro Gly Ser Ala Gln Asn Leu Met Leu Glu Leu Gln Arg  
 35 40 45  
 Asp Asn His Met Gln Tyr Leu Ser Lys Gly Leu Arg His Leu Ser Ser  
 50 55 60  
 Ala Phe Ser Val Leu Asp Ala Asn Arg Pro Trp Leu Cys Tyr Trp Ile  
 65 70 75 80  
 Phe His Ser Ile Ala Leu Leu Gly Glu Ser Val Asp Asp Glu Leu Glu  
 85 90 95  
 Asp Asn Thr Ile Asp Phe Leu Asn Arg Cys Gln Asp Pro Asn Gly Gly  
 100 105 110  
 Tyr Ala Gly Gly Pro Gly Gln Met Pro His Ile Ala Thr Thr Tyr Ala  
 115 120 125  
 Ala Val Asn Thr Leu Ile Thr Leu Gly Gly Gln Lys Ser  
 130 135 140

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<210> 19  
 <211> 333  
 <212> PRT  
 <213> Pisum sativum

<400> 19

Met	Ala	Gly	Asn	Ile	Glu	Val	Glu	Glu	Asp	Asp	Arg	Val	Pro	Leu	Arg	1	5	10	15
Leu	Arg	Pro	Glu	Trp	Ser	Asp	Val	Thr	Pro	Ile	Pro	Gln	Asp	Asp	Gly	20	25	30	
Pro	Ser	Pro	Val	Val	Pro	Ile	Asn	Tyr	Ser	Glu	Glu	Phe	Ser	Glu	Val	35	40	45	
Met	Asp	Tyr	Phe	Arg	Ala	Val	Tyr	Phe	Ala	Lys	Glu	Leu	Ser	Ser	Arg	50	55	60	
Ala	Leu	Ala	Leu	Thr	Ala	Glu	Ala	Ile	Gly	Leu	Asn	Ala	Gly	Asn	Tyr	65	70	75	80
Thr	Val	Trp	His	Phe	Arg	Arg	Leu	Leu	Leu	Glu	Ser	Leu	Lys	Val	Asp	85	90	95	
Leu	His	Val	Glu	Arg	Glu	Phe	Val	Glu	Arg	Val	Ala	Ser	Gly	Asn	Ser	100	105	110	
Lys	Asn	Tyr	Gln	Ile	Trp	His	His	Arg	Arg	Trp	Val	Ala	Glu	Lys	Leu	115	120	125	
Gly	Pro	Glu	Ala	Arg	Asn	Ser	Glu	Leu	Glu	Phe	Thr	Lys	Lys	Ile	Leu	130	135	140	
Ser	Val	Asp	Ala	Lys	His	Tyr	His	Ala	Trp	Ser	His	Arg	Gln	Trp	Val	145	150	155	160
Leu	Gln	Asn	Leu	Gly	Gly	Trp	Glu	Asp	Glu	Leu	Ser	Tyr	Cys	Ser	Glu	165	170	175	
Leu	Leu	Ala	Glu	Asp	Ile	Phe	Asn	Asn	Ser	Ala	Trp	Asn	Gln	Arg	Tyr	180	185	190	
Phe	Val	Ile	Thr	Arg	Ser	Pro	Val	Leu	Gly	Gly	Leu	Lys	Ala	Met	Arg	195	200	205	
Glu	Ser	Glu	Val	Leu	Phe	Thr	Val	Glu	Ala	Ile	Ile	Ser	Tyr	Pro	Glu	210	215	220	
Asn	Glu	Ser	Ser	Trp	Arg	Tyr	Leu	Arg	Gly	Leu	Phe	Lys	Asp	Glu	Ser	225	230	235	240
Thr	Leu	Tyr	Val	Asn	Asp	Ala	Gln	Val	Ser	Ser	Leu	Cys	Leu	Lys	Ile	245	250	255	
Leu	Lys	Thr	Lys	Ser	Asn	Tyr	Leu	Phe	Ala	Leu	Ser	Thr	Leu	Leu	Asp	260	265	270	
Leu	Ser	Ala	Ser	Val	Ile	Gln	Pro	Asn	Glu	Asp	Phe	Arg	Asp	Ala	Ile	275	280	285	
Glu	Ala	Leu	Arg	Leu	Gln	Ile	Leu	Ile	Lys	Gln	Asp	Ser	Asp	Ile	Ala				

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290

295

300

Ile Thr Ile Cys Ser Ile Leu Glu Gln Val Asp Pro Ile Arg Val Asn  
305 310 315 320

Tyr Trp Val Trp Arg Lys Ser Arg Leu Pro Gln Ala Ala  
325 330

&lt;210&gt; 20

&lt;211&gt; 326

&lt;212&gt; PRT

&lt;213&gt; Arabidopsis thaliana

&lt;400&gt; 20

Met Asn Phe Asp Glu Thr Val Pro Leu Ser Gln Arg Leu Glu Trp Ser  
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Asp Val Val Pro Leu Thr Gln Asp Asp Gly Pro Asn Pro Val Val Pro  
20 25 30

Ile Ala Tyr Lys Glu Glu Phe Arg Glu Thr Met Asp Tyr Phe Arg Ala  
35 40 45

Ile Tyr Phe Ser Asp Glu Arg Ser Pro Arg Ala Leu Arg Leu Thr Glu  
50 55 60

Glu Thr Leu Leu Leu Asn Ser Gly Asn Tyr Thr Val Trp His Phe Arg  
65 70 75 80

Arg Leu Val Leu Glu Ala Leu Asn His Asp Leu Phe Glu Glu Leu Glu  
85 90 95

Phe Ile Glu Arg Ile Ala Glu Asp Asn Ser Lys Asn Tyr Gln Leu Trp  
100 105 110

His His Arg Arg Trp Val Ala Glu Lys Leu Gly Pro Asp Val Ala Gly  
115 120 125

Arg Glu Leu Glu Phe Thr Arg Arg Val Leu Ser Leu Asp Ala Lys His  
130 135 140

Tyr His Ala Trp Ser His Arg Gln Trp Thr Leu Arg Ala Leu Gly Gly  
145 150 155 160

Trp Glu Asp Glu Leu Asp Tyr Cys His Glu Leu Leu Glu Ala Asp Val  
165 170 175

Phe Asn Asn Ser Ala Trp Asn Gln Arg Tyr Tyr Val Ile Thr Gln Ser  
180 185 190

Pro Leu Leu Gly Gly Leu Glu Ala Met Arg Glu Ser Glu Val Ser Tyr  
195 200 205

Thr Ile Lys Ala Ile Leu Thr Asn Pro Ala Asn Glu Ser Ser Trp Arg  
210 215 220

Tyr Leu Lys Ala Leu Tyr Lys Asp Asp Lys Glu Ser Trp Ile Ser Asp  
225 230 235 240

Pro Ser Val Ser Ser Val Cys Leu Asn Val Leu Ser Arg Thr Asp Cys  
245 250 255

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Phe His Gly Phe Ala Leu Ser Thr Leu Leu Asp Leu Leu Cys Asp Gly  
 260 265 270  
 Leu Arg Pro Thr Asn Glu His Lys Asp Ser Val Arg Ala Leu Ala Asn  
 275 280 285  
 Glu Glu Pro Glu Thr Asn Leu Ala Asn Leu Val Cys Thr Ile Leu Gly  
 290 295 300  
 Arg Val Asp Pro Ile Arg Ala Asn Tyr Trp Ala Trp Arg Lys Ser Lys  
 305 310 315 320  
 Ile Thr Val Ala Ala Ile  
 325

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 <211> 470  
 <212> PRT  
 <213> Lycopersicon esculentum

<400> 21  
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 20 25 30  
 Asn Ser Pro Ser Asp Leu Ile Glu Ile Glu Arg Asp Lys His Phe Gly  
 35 40 45  
 Tyr Leu Ser Gln Gly Leu Arg Lys Leu Gly Pro Ser Phe Ser Val Leu  
 50 55 60  
 Asp Ala Ser Arg Pro Trp Leu Cys Tyr Trp Thr Leu His Ser Ile Ala  
 65 70 75 80  
 Leu Leu Gly Glu Ser Ile Gly Gly Lys Leu Glu Asn Asp Ala Ile Asp  
 85 90 95  
 Phe Leu Thr Arg Cys Gln Asp Lys Asp Gly Gly Tyr Gly Gly Gly Pro  
 100 105 110  
 Gly Gln Met Pro His Leu Ala Thr Thr Tyr Ala Ala Val Asn Ser Leu  
 115 120 125  
 Ile Thr Leu Gly Lys Pro Glu Ala Leu Ser Ser Ile Asn Arg Glu Lys  
 130 135 140  
 Leu Tyr Thr Phe Leu Leu Arg Met Lys Asp Ala Ser Gly Gly Phe Arg  
 145 150 155 160  
 Met His Asp Gly Gly Glu Val Asp Val Arg Ala Cys Tyr Thr Ala Ile  
 165 170 175  
 Ser Val Ala Asn Ile Leu Asn Ile Val Asp Asp Glu Leu Ile His Gly  
 180 185 190  
 Val Gly Asn Tyr Ile Leu Ser Cys Gln Thr Tyr Glu Gly Gly Ile Ala  
 195 200 205

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Gly Glu Pro Gly Ser Glu Ala His Gly Gly Tyr Thr Phe Cys Gly Leu  
 210 215 220  
 Ala Ala Met Ile Leu Ile Asn Glu Val Asp Arg Leu Asp Leu Pro Gly  
 225 230 235 240  
 Leu Ile Asp Trp Val Val Phe Arg Gln Gly Val Glu Gly Gly Phe Gln  
 245 250 255  
 Gly Arg Thr Asn Lys Leu Val Asp Gly Cys Tyr Ser Phe Trp Gln Gly  
 260 265 270  
 Ala Val Val Phe Leu Ile Gln Arg Leu Asn Leu Ile Val His Glu Gln  
 275 280 285  
 Leu Gly Leu Ser Asn Asp Leu Ser Thr Glu Ser Ala Asp Asp Ser Ser  
 290 295 300  
 Glu Ser Glu Leu Ser Asp Glu Glu Glu His Leu Glu Gly Ile Ser Ser  
 305 310 315 320  
 His Val Gln Asp Thr Phe Pro Leu Gly Gln Ala Gly Ala Cys Gln Glu  
 325 330 335  
 Asn Ala Ser His Ser Pro Lys Ile Ala Asp Thr Gly Tyr Glu Phe Ile  
 340 345 350  
 Asn Arg Pro Ile Ala Met Arg Pro Leu Phe Asp Ser Met Tyr Leu Gln  
 355 360 365  
 Gln Tyr Val Leu Leu Cys Ser Gln Ile Glu Val Gly Gly Phe Arg Asp  
 370 375 380  
 Lys Pro Gly Lys Gly Arg Asp Tyr Tyr His Thr Cys Tyr Cys Leu Ser  
 385 390 395 400  
 Gly Leu Ser Ile Ala Gln Tyr Ser Trp Thr Asp Glu Ala Asp Ser Thr  
 405 410 415  
 Pro Leu Pro Arg Asp Val Phe Gly Pro Tyr Ser Lys Cys Leu Leu Glu  
 420 425 430  
 Gln Val His Pro Leu Phe Asn Val Val Leu Asp Arg Tyr Tyr Glu Ala  
 435 440 445  
 Arg Glu Tyr Ser Gln Ala Cys Glu Thr Val Ser Pro Leu Ser Leu Ala  
 450 455 460  
 Pro Thr Phe Ser Glu Thr  
 465 470

<210> 22  
 <211> 419  
 <212> PRT  
 <213> Pisum sativum

<400> 22  
 Met Glu Ala Ser Thr Ala Ala Glu Thr Pro Thr Pro Thr Val Ser Gln  
 1 5 10 15

Arg Asp Gln Trp Ile Val Glu Ser Gln Val Phe His Ile Tyr Gln Leu

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**SECRET**



Glu	Val	Asn	Arg	Leu	Asp	Leu	Pro	Arg	Leu	Leu	Asp	Trp	Val	Val	Phe	210	215	220
Arg	Gln	Gly	Lys	Glu	Cys	Gly	Phe	Gln	Gly	Arg	Thr	Asn	Lys	Leu	Val	225	230	235
Asp	Gly	Cys	Tyr	Ser	Phe	Trp	Gln	Gly	Gly	Ala	Val	Ala	Leu	Leu	Gln	245	250	255
Arg	Leu	His	Ser	Ile	Ile	Asp	Glu	Gln	Met	Ala	Glu	Ala	Ser	Gln	Phe	260	265	270
Val	Thr	Val	Ser	Asp	Ala	Pro	Glu	Glu	Lys	Glu	Cys	Leu	Asp	Gly	Thr	275	280	285
Ser	Ser	His	Ala	Thr	Ser	His	Ile	Arg	His	Glu	Gly	Met	Asn	Glu	Ser	290	295	300
Cys	Ser	Ser	Asp	Val	Lys	Asn	Ile	Gly	Tyr	Asn	Phe	Ile	Ser	Glu	Trp	305	310	315
Arg	Gln	Ser	Glu	Pro	Leu	Phe	His	Ser	Ile	Ala	Leu	Gln	Gln	Tyr	Ile	325	330	335
Leu	Leu	Cys	Ser	Gln	Glu	Gln	Asp	Gly	Gly	Leu	Arg	Asp	Lys	Pro	Gly	340	345	350
Lys	Arg	Arg	Asp	His	Tyr	His	Ser	Cys	Tyr	Cys	Leu	Ser	Gly	Leu	Ser	355	360	365
Leu	Cys	Gln	Tyr	Ser	Trp	Ser	Lys	Arg	Pro	Asp	Ser	Pro	Pro	Leu	Pro	370	375	380
Lys	Val	Val	Met	Gly	Pro	Tyr	Ser	Asn	Leu	Leu	Glu	Pro	Ile	His	Pro	385	390	395
Leu	Phe	Asn	Val	Val	Leu	Asp	Arg	Tyr	Arg	Glu	Ala	His	Glu	Phe	Phe	405	410	415
Ser	Gln	Leu																

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